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## REVIEW ARTICLE

# Controlling medication nonadherence in chronic illness

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### Abstract:

Patient adherence during the treatment period must be considered, because patient adherence plays an important role in achieving therapeutic success, especially for chronic diseases. Treatment non-adherence is a common and complex problem. Failure to follow a treatment schedule can lead to major health complications, including death. To avoid it, several interventions are needed to control patient non-adherence. There are several interventions that can support and improve patient adherence. These include digital interventions; increasing patient knowledge and understanding of the treatment being undertaken with counseling, Drug Information Services (PIO), providing educational leaflets, digital pillbox reminders and Pill Cards; family support; diaries; keep treatment commitments. Based on this, it is necessary to have an intervention method in terms of education (educational), behavior (behavior), and attitude (affective) in order to achieve patient adherence and the success of chronic disease therapy.

**Keywords:** *Non-adherence, treatment, chronic disease, control*

### Introduction

A chronic disease is a condition or disease that lasts a long time, usually three months or more. The most common chronic diseases include conditions such as heart disease, stroke, respiratory disease, cancer, hypertension and diabetes (Souza-Pereira et al., 2020). In order to immediately achieve the success or recovery of patient therapy, good cooperation is needed between patients and their families with health service providers (Lailatushifah, 2014). Various parties must work together to achieve patient compliance in treatment, because patient compliance plays an important role in achieving therapeutic success, especially for chronic diseases. According to Hu et al. (2014), adherence is an important component in treatment, especially in the long-term treatment of chronic diseases, and plays an important role in the success of therapy (Lachaine et al., 2013). According to Zeber et al. (2013), adherence can be defined as the extent to which the patient can use the drug regimen (interval and dose) as determined by the doctor's prescription. According to Kardas et al. (2013), there are five factors that can cause non-compliance, namely socio-economic factors, team and health system factors, condition factors, therapy factors and patient factors (Edi, 2015).

Medication non-adherence is a common and complex problem. Failure to follow the treatment schedule can lead to many health complications, including death. Non-adherence to taking medication can be seen from the dose, how to take medication, time to take medication, and period of taking medication that is not in accordance with the rules. The types of non-compliance include *intentional non-compliance* and *unintentional non-compliance*. *Intentional non-adherence* is caused by limited medical costs, patient apathy, and patient distrust of drug effectiveness. *Unintentional non-compliance* is caused by patients forgetting to take medication, ignorance of treatment instructions, errors in reading etiquette (Lailatushifah, 2014).

Some of the causes of patient non-adherence to taking medication include not being supervised by the Drug Swallowing Supervisor (PMO), patients not controlling medication according to the prescribed schedule, financial problems, limited social support, communication media, and interaction with health workers (Loriana et al., 2014; Santi, 2017).

Therefore, appropriate interventions are needed to improve patient adherence to treatment, through education (*educational*), behavior (*behavioral*), and attitudes (*affective*). The approach through education is done by providing information or skills that are conveyed in a simple, clear and appropriate manner to the patient's needs. The behavioral approach is by using reminder techniques via telephone/sms, alarms to remember, setting goals, and by providing counseling or by visiting the patient's home for assistance. As for the attitude approach, namely by providing encouragement and emotional support to patients (Triyanto et al., 2015). Based on previous research, it is known that there are several interventions that can support and improve patient compliance. These interventions include digital interventions; increasing patients' knowledge and understanding of the treatment they are undergoing through counseling, Drug Information Services (PIO), providing *leaflets* educational, digital *pillbox reminders* and *Pill Cards*; family support; diary; maintain treatment commitments.

### **Digital Intervention**

Research conducted by Yusmaniar et al. (2020) shows that digital medication reminder applications such as AMINO (Drinking Drug Alarm) can be used as an alternative to improve medication adherence and treatment success for hypertension patients, which can be seen from the significant impact of reducing the patient's blood pressure. The AMINO application will provide instructions for taking medicine through an alarm sound and a display on the phone screen according to the drug information specifications. Silva et al. (2018), mentions that the existence of a Web or Mobile system can help improve adherence to treatment. The device can collect data and can process information about treatment. Meanwhile, text message intervention (TMI) can improve patient compliance in rural China, where most of the patients suffer from relatively poor type 2 diabetes mellitus (Chen et al., 2018).

### **Medication Reminder and Pill Card**

Several other interventions that can help improve medication adherence in patients include counseling, Drug Information Services (PIO), providing leaflets educational, digital pillbox reminders and Pill Cards. According to Kripalani et al., (2007), the advantages of the Pill Card are that it is easy to use, understand and can increase knowledge about the necessary treatment. Especially patients who forget easily and have complex treatment regimens such as hypertension (Ariyani et al., 2018). The research of Sammulia et al., (2016) shows that giving pill boxes can improve adherence, and can reduce systolic blood pressure and diastolic blood pressure in geriatric patients with hypertension in Batam City. Giving medication reminder chart can improve compliance, but has not been able to reduce systolic blood pressure and diastolic blood pressure in geriatric patients with hypertension in Batam City. Pill box is better than medication reminder chart in improving adherence and decreasing systolic and diastolic blood pressure in patients.

The results obtained from Santi's research (2017), adherence to drug use by giving aintervention pill reminder did not affect the decrease in blood sugar of research subjects. This is because the decrease and increase in blood sugar is not only based on adherence to medication use but diet, mindset (stress) also affects blood sugar.

### **PIO and Education**

Purpose of providing drug information is to increase patient adherence to medication and support rational treatment. This is in line with Idacahyati's research (2017), which showed an increase in patient compliance and a decrease in systolic and diastolic blood pressure after drug information was given. Education is a form of action that can help sufferers in overcoming their health problems. The results of research by Nuridayanti et al., (2018), say that diet education and drug therapy have an influence on medication adherence, medication adherence is the level of behavior in which patients use drugs, obey all the rules and advice recommended by health workers. Nurses have an important role in providing health services, including health education.

### **Counseling**

Research Prihandiwati et al. (2018) stated that the intervention brief counseling provided by pharmacists had a positive impact on increasing medication adherence in the intervention group. The intervention brief counseling indirectly reduces the patient's blood sugar level, followed by an increase in medication adherence. Brief counseling can be said to be more effective in terms of minimizing counseling time so as not to interfere with the pharmaceutical service process. In

addition, with brief counseling patients will also get knowledge from people who are considered competent so as not to change the patient's attitude and behavior that occurs due to tending to feel compelled or pressured to undergo treatment.

### **Family Support**

Interventions of family support or FamLit during treatment can improve or maintain patient compliance. The Family Support Intervention (FamLit) emphasizes building understanding, communication, support and patience with the patient's family or nurse as an intermediary to improve patient medication adherence. Increased patient medication adherence can be seen through increasing patient behavior and knowledge (Wu et al., 2019). As for treatment counseling techniques in health services in India (HIS), which are very important to increase patient understanding of their treatment which can significantly improve patient compliance (Colvin et al., 2018).

### **Diary Book**

Diary book can also improve patient compliance. The diary is used as a form of self-management so that hypertensive patients adhere to the treatment program. The diary is designed to contain written information related to hypertension. Increased compliance by using a diary can be said to occur because the diary is a tool that can make hypertensive patients have self-confidence that the ability to organize can be implemented in daily life to form obedient behavior in taking medication (Khoiriyah & Ediati, 2015).

### **Conclusion**

Several interventions can be carried out to improve patient medication adherence from several previous research results, including digital technology interventions, *medication reminders*, *Pill Cards*, drug information provision, education, counseling, family support, and diaries which are known to significantly increase adherence both between groups before and after the intervention or in studies using a control group.

### **References:**

- Ariyani, H., Hartanto, D., & Lestari, A. (2018). *Kepatuhan Pasien Hipertensi Setelah Pemberian Pill Card di RS X Banjarmasin*. 1(2), 81–88.
- Chen, X. Z., Yu, S. J., Li, C. Y., Zhan, X. X., & Yan, W. R. (2018). Text message–based intervention to improve treatment adherence among rural patients with type 2 diabetes mellitus: a qualitative study. *Public Health*, 163(13), 46–53. <https://doi.org/10.1016/j.puhe.2018.06.016>
- Colvin, N. N., Mospan, C. M., Buxton, J. A., Waggett, J. "Davie," & Gillette, C. (2018). Using Indian Health Service (IHS) counseling techniques in an independent community pharmacy to improve adherence rates among patients with diabetes, hypertension, or hyperlipidemia. *Journal of the American Pharmacists Association*, 58(4), S59-S63.e2. <https://doi.org/10.1016/j.japh.2018.04.024>
- Edi, I. G. M. S. (2015). Faktor-Faktor Yang Mempengaruhi Kepatuhan Pasien Pada Pengobatan. *Jurnal Ilmiah Medicamento*, 1(1), 1–8. <https://doi.org/10.36733/medicamento.v1i1.719>
- Hu, D., Juarez, D. T. air., Yeboah, M., & Castillo, T. P. (2014). Interventions to increase medication adherence in African-American and Latino populations: a literature review. *Hawai'i Journal of Medicine & Public Health: A Journal of Asia Pacific Medicine & Public Health*, 73(1), 11–18.
- Idacahyati, K. (2017). Peningkatan Kepatuhan Pasien Hipertensi dengan Pemberian Informasi Obat. *Jurnal Kesehatan Bakti Tunas Husada*, 17(2), 243–247.
- Kardas, P., Lewek, P., & Matyjasczyk, M. (2013). Determinants of patient adherence: A review of systematic reviews. *Frontiers in Pharmacology*, 4 JUL(July), 1–16. <https://doi.org/10.3389/fphar.2013.00091>
- Khoiriyah, A., & Ediati, A. (2015). Pengaruh Buku Harian untuk Meningkatkan Kepatuhan pada Pasien Hipertensi: Studi Kuasi Eksperimen pada Pasien Hipertensi. *Jurnal Empati*, 4(1), 35–42.
- Kripalani, S., Robertson, R., Love-Ghaffari, M. H., Henderson, L. E., Praska, J., Strawder, A., Katz, M. G., & Jacobson, T. A. (2007). Development of an illustrated medication schedule as a low-literacy patient education tool. *Patient Education and Counseling*, 66(3), 368–377. <https://doi.org/10.1016/j.pec.2007.01.020>

- Lachaine, J., Yen, L., Beauchemin, C., & Hodgkins, P. (2013). Medication adherence and persistence in the treatment of Canadian ulcerative colitis patients: Analyses with the RAMQ database. *BMC Gastroenterology*, *13*(1), 1. <https://doi.org/10.1186/1471-230X-13-23>
- Lailatushifah, S. N. F. (2014). *Kepatuhan Pasien yang Menderita Penyakit Kronis dalam Mengonsumsi Obat Harian*.
- Loriana, R., Thaha, R. M., & Ramdan, I. M. (2014). Efek konseling terhadap pengetahuan, sikap dan kepatuhan berobat penderita tuberkulosis paru di wilayah kerja Dinas Kesehatan Kota Samarinda. *Univeristas Hasanudin*, 1–13. <http://pasca.unhas.ac.id/jurnal/files/1445b949d295c9486aeb541ca379aefb.pdf>
- Nuridayanti, A., Makiyah, N., & Rahmah. (2018). Pengaruh Edukasi Terhadap Kepatuhan Minum Obat Penderita Hipertensi Di Pos Pembinaan Terpadu Kelurahan Mojo Kota Kediri Jawa Timur. *Jurnal Kesehatan Karya Husada*, *6*(1), 1–7.
- Prihandiwati, E., Rahem, A., & Rachmawati. (2018). Pengaruh Brief Counseling Terhadap Kepatuhan Minum Obat Dan Kadar Gula Darah Pasien Diabetes Mellitus Tipe 2 di Rsd Ulin Banjarmasin. *Calyptra*, *7*(1), 2068–2085.
- Sammulia, S. F., Rachmawati, F., & Andayani, T. M. (2016). Perbandingan Pill Box dan Medication Chart dalam Meningkatkan Kepatuhan dan Outcome Klinik Geriatri Kota Batam. *Jurnal Manajemen Dan Pelayanan Farmasi*, *6*(4), 288–296.
- Santi, M. D. S. (2017). Pengaruh Intervensi Pill Reminder dalam Penggunaan Obat Oral Anti Diabetes (OAD) Terhadap Peningkatan Kepatuhan Pasien Diabetes Mellitus Tipe 2 di Rumah Diabetes Universitas Surabaya. *Calyptra: Jurnal Ilmiah Mahasiswa Universitas Surabaya*, *6*(2), 567–576.
- Silva, V., Souza, V. S., Da Cruz, R. G., Jazdi, N., & De Lucena, V. F. (2018). Mobi health: A system to improve medication adherence in hypertensive patients. *Procedia Computer Science*, *141*(2017), 366–373. <https://doi.org/10.1016/j.procs.2018.10.188>
- Souza-Pereira, L., Pombo, N., Ouhbi, S., Felizardo, V., & Garcia, N. (2020). Clinical decision support systems for chronic diseases: A Systematic literature review. *Computer Methods and Programs in Biomedicine*, 195. <https://doi.org/10.1016/j.cmpb.2020.105565>
- Triyanto, E., Isworo, A., & Rahayu, E. (2015). Model Pemberdayaan Terpadu untuk Meningkatkan Kepatuhan Pasien Diabetes Mellitus. *JURNAL MKMI*, 228–234.
- Wu, J. R., Mark, B., Knafl, G. J., Dunbar, S. B., Chang, P. P., & DeWalt, D. A. (2019). A multi-component, family-focused and literacy-sensitive intervention to improve medication adherence in patients with heart failure—A randomized controlled trial. *Heart and Lung*, *48*(6), 507–514. <https://doi.org/10.1016/j.hrtlng.2019.05.011>
- Yusmaniar, Susanto, Y., Surahman, & Alfian, R. (2020). Pengaruh Alarm Minum Obat (AMINO) untuk Meningkatkan Kepatuhan Minum Obat Pasien Hipertensi. *Pengaruh Alarm Minum Obat (AMINO) Untuk Meningkatkan Kepatuhan Minum Obat Pasien Hipertensi*, *5*(1), 96–107.
- Zeber, J. E., Manias, E., Williams, A. F., Hutchins, D., Udezi, W. A., Roberts, C. S., & Peterson, A. M. (2013). A systematic literature review of psychosocial and behavioral factors associated with initial medication adherence: A report of the ISPOR medication adherence & persistence special interest group. *Value in Health*, *16*(5), 891–900. <https://doi.org/10.1016/j.jval.2013.04.014>